DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 1.28

WELDING INSPECTION REPORT

Resident Engineer: Siegenthaler, Peter
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-020319
Date Inspected: 03-Feb-2011

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: American Bridge/Fluor Enterprises, a JV

OSM Arrival Time: 630
OSM Departure Time: 1500
Location: Job Site

CWI Name:	See Below		**CWI Present:**	☑ Yes	☐ No
Inspected CWI report:	☐ Yes	☑ No ☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No ☐ N/A
Electrode to specification:	☑ Yes	☐ No ☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No ☐ N/A
Qualified Welders:	☑ Yes	☐ No ☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No ☐ N/A
Approved Drawings:	☑ Yes	☐ No ☐ N/A	**Approved WPS:**	☑ Yes	☐ No ☐ N/A
			Delayed / Cancelled:	☐ Yes	☑ No ☐ N/A

Bridge No: 34-0006
Component: Orthotropic Box Girders

Summary of Items Observed:

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the project site and observed the following work performed by American Bridge/Fluor Enterprises (AB/F) personnel at the locations noted below:

A). DAH Access Hole
B). "A" Deck Stiffeners
C). Pipe Welding

A). Deck Access Hole

The QAI observed the welder Wen Han Yu ID-6317 performed the repair welding of the areas marked as UT rejects on the Complete Joint Penetration (CJP) groove weld identified as WN: 2W-PP13.5-W5-SW, R1 cycle repair. The discontinuities were discovered by QC technician Pat Swain. The repair welding was performed utilizing the Shielded Metal Arc Welding (SMAW) process and the 3.2mm electrode as per the Welding Procedure Specification (WPS) identified as ABF-WPS-1001 Repair Rev. 0. The WPS was also used by the QC inspector, Mr. Gary Erhsom, as a reference to monitor and verify the Direct Current welding parameters which were noted as 134 amps. The welding was performed in the overhead (4G) position with the work placed in an approximate horizontal plane and the weld metal deposited from the underneath side.

Later in the shift, the QAI observed the QC inspector, Mr. Erhsom, verifying the welding parameters during the repair welding of the deck access hole identified as WN: 2W-PP13.5-W5-SW, R1. The welding was performed by the welder Wai Kitlai ID-2953 utilizing the SMAW process as per the WPS and was also used by the QC inspector

during the monitoring of the welding operation. The welding was performed in the flat (1G) position with work in an approximate horizontal plane and the weld metal deposited from the upper side.

B). "A" Deck Stiffeners

The QAI observed the QC inspector Gary Erhsom inspect the fit-up and alignment of the longitudinal stiffener field splice identified as WN: 3W-PP19.5-W5-LS-E. There appeared to be no issues noted by the QC inspector and the welder, Hua Qiang Hwang ID-2930, commence the welding of the Complete Joint Penetration (CJP) groove joint. The welder utilized the Shielded Metal Arc Welding (SMAW) process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1012-3, Rev.0. The WPS was also utilized by the QC inspector Gary Erhsom as a reference to monitor welding operation and verify the welding parameters. The amperage was recorded as 127 amps and the minimum preheat of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to comply with the contract documents.

The QAI also observed the welder, Xiao Jian Wan ID-9677, correcting the excessive root opening on the longitudinal stiffener field splice identified as WN: 2W-3W-A-LS3. The dimensions of the root opening appeared to be 17mm which was noted by the QC inspector. The welder utilized the SMAW process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1012-3, Rev.0 and was also utilized by the QC inspector Gary Erhsom as a reference. The amperage was recorded as 124 amps and the minimum preheat of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was verified.

The welding was performed by the welders in the vertical (3G) position with the work placed in an approximately vertical plane and the groove approximately vertical. The minimum preheat temperature of 100 degrees Celsius and the interpass temperature of 230 degrees Celsius appeared to comply with the contract documents. The welder utilized a slag hammer, pneumatic air gun with an attached chisel and a wire wheel attached to a 4" high cycle grinder to remove slag after deposit each fill pass. The electrodes were stored in electrically heated, thermostatically controlled oven after removal from the sealed containers. The exposure limits of the electrodes identified as E9018-H4R and the minimum storage oven temperature of 250 degrees Celsius appeared to be in compliance with the contract documents. The welder completed the repair welding during this shift. At the time of the observation no issues were noted by the QAI.

C). Pipe Welding

The QAI observed the welder, Rick Kiikvee-ID-5319, perform the Complete Joint Penetration (CJP) groove welding of the field pipe splices for the 4" compressed air service and 2.5" utility water lines located at the W2 Bent Cap of the E-line. The welding was performed utilizing the Weld Procedure Specification (WPS) identified as 1-12-1 which was also utilized by the QC inspector, Steve Jensen, to monitor the welding and to verify the welding parameters. The QC inspector verified the welding parameters and were observed as 68 amps.

QA Observation and Verification Summary

The QA inspector observed the QC activities and the welding of the field splices utilizing the WPS as noted above, which appeared to be posted at the weld station. The welding parameters and surface temperatures were verified by the QC inspectors utilizing a Fluke 337 clamp meter for the electrical welding parameters and a Fluke 63 IR

Thermometer for verifying the preheat and interpass temperatures. The ESAB consumables utilized for the SMAW welding process appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift appeared to be in general compliance with the contract documents. At random intervals, the QAI verified the QC inspection, testing, welding parameters and the surface temperatures utilizing various inspection equipment and gages which included a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

The digital photographs below illustrate some of the work observed during this scheduled shift.

Summary of Conversations:

There were general conversations with Quality Control Inspector Bonifacio Daquinag, Jr. at the start of the shift regarding the location of American Bridge/Fluor welding, inspection and N.D.E. testing personnel scheduled for this shift.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Sang Le (916) 764-5650, who represents the Office of Structural Materials for your project.

Inspected By:	Reyes,Danny	Quality Assurance Inspector
Reviewed By:	Levell,Bill	QA Reviewer